

6. Process according to Claim 2, wherein the layer is applied via one of a thermal spraying process, a slip technique, or a painting technique.
7. Process according to Claim 3, wherein the layer is applied via one of a thermal spraying process, a slip technique, or a painting technique.
8. Process according to Claim 4, wherein the layer is applied via one of a thermal spraying process, a slip technique, or a painting technique.
9. Process according to Claim 1, wherein the energy is introduced via at least one of an infrared heating source, a laser, and an induction heat source.
10. Process according to Claim 2, wherein the energy is introduced via at least one of an infrared heating source, a laser, and an induction heat source.
11. Process according to Claim 3, wherein the energy is introduced via at least one of an infrared heating source, a laser, and an induction heat source.

12. Process according to Claim 4, wherein the energy is introduced via at least one of an infrared heating source, a laser, and an induction heat source.
13. Process according to Claim 5, wherein the energy is introduced via at least one of an infrared heating source, a laser, and an induction heat source.
14. Process according to Claim 6, wherein the energy is introduced via at least one of an infrared heating source, a laser, and an induction heat source.
15. Process according to Claim 7, wherein the energy is introduced via at least one of an infrared heating source, a laser, and an induction heat source.
16. Process according to Claim 8, wherein the energy is introduced via at least one of an infrared heating source, a laser, and an induction heat source.

17 A process for producing a surface layer with embedded inter-metallic phases, the process comprising:

- (a) applying a layer to a substrate, the layer comprising a metal and a ceramic;
- (b) introducing energy to react the metal and the ceramic such that a resulting surface layer is formed with inter-metallic phases.

18. The process of claim 17, wherein the energy is introduced simultaneously with the application of the layer.

19. The process of claim 17, wherein the energy is introduced subsequent to the application of the layer.

20. The process of Claim 17, wherein the metal is selected from the group consisting of aluminium and aluminium alloy.

21. The process of Claim 17, wherein the ceramic is an oxide ceramic.